

Name: _____

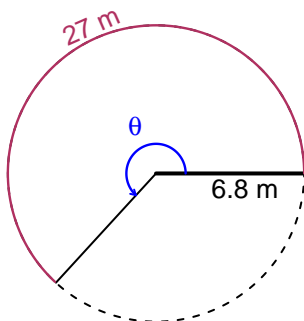
Date: _____

Trig Final (TEST v645)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 27 meters. The radius is 6.8 meters. What is the angle measure in radians?

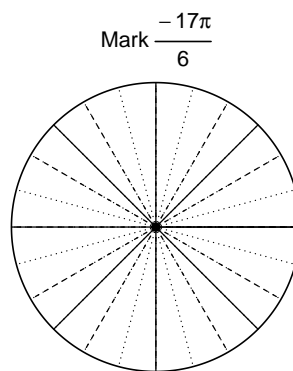


Question 2

Consider angles $\frac{13\pi}{4}$ and $\frac{-17\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{13\pi}{4}\right)$ and $\sin\left(\frac{-17\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\cos(13\pi/4)$



Find $\sin(-17\pi/6)$

Question 3

If $\cos(\theta) = \frac{33}{65}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 6.09 Hz, a midline at $y = -3.76$ meters, and an amplitude of 2.1 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).